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EXAMINER	
GRAHAM, CLEMENT B	

ART UNIT	PAPER NUMBER
3628	

DATE MAILED: 01/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/764,073	NOZAKI ET AL.	
	Examiner	Art Unit	
	Clement B Graham	3628	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *October 27,2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-11 remained pending and claim 12 has been added.

Claim Rejections - 35 USC § 101

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-12, are rejected under 35 U.S.C. 103(a) as being unpatentable over Lundahl et al (Hereinafter Lundahl U.S. Patent 6, 636, 862) in view of Giles U.S Patent 5, 850, 339.

As per claims 1, Lundahl discloses a score calculation method in a computer of calculating a score from an input data including a plurality of attributes comprising the steps of:

preparing a plurality of prediction models (see column 8 lines 60-67 and column 9 lines 1-67 and column 10 lines 1-2)

arranged in a the computer for calculating with the prediction model in a first root layer ("i. e, "first data matrix") (see column 10 lines 3-10 and column 42 lines 37-60 and column 43 lines 10-15) an output value ("i. e, optimal value") from at least one attribute included in the input data by a calculation unit of the computer and selecting the prediction model in a subsequent layer according to the output value ("i. e, optimal value") by a selection unit of the computer(see column 44 lines 9-44) repetitiously ("i. e, repeatedly") executing the output value calculation step and the subsequent layer prediction model selection step while shifting the layer to a leaf side until the prediction model of a final leaf layer of the (see column 44 lines 9-44 and column 42 lines 37-60 and column 43 lines 10-15) is reached and calculating a score(see column 33 lines 39-48) from the input data using the prediction model of the final leaf layer by the

calculation unit.(see column 41 lines 47-50 and column 44 lines 9-44 and column 42 lines 37-60 and column 43 lines 10-15) Lundahl further discloses description for the terms calibration, updating, and querying, refer generally to modeling and or functional relationships with or within or between datasets (see column 8 lines 19-21).

Lundahl fail to explicitly teach hierarchical tree structure.
However Giles discloses many of the traditional cluster analysis methods, both partitioning and hierarchical, are encumbered by looking for many or all possible clusters within the data this is followed by a cluster consolidation process(see column 2 lines 39-63) and After initialization and input processes, the inventive method finds the optimal "boundary" for each numeric independent input variable and calculates a "score" for each independent input variable, whether the variable is numeric or categoric. The method then finds the best "boundary(ies)" and highest "score" for the combination of the two highest scoring independent variables and is repeated for the three highest scoring independent variables. This can be repeated for any number of independent variables and the "score" which is critical to the analysis process is basically a decision criteria. While there are many ways to calculate a "score", the following describes an exemplary way which appears to work well for manufacturing data. First, a numeric variable value is defined as "included" if the value is between the "boundary" and the maximum or minimum value for that variable, depending on whether the "boundary" is on the high or low side of the average for that variable. For categoric variables, "included" is determined by which of two values (i.e., categories) the variable has. One type of outcome is referred to as "bad", and the other is referred to as "good". For combinations of variables, the values of all of the variables for a particular process operation must be within the defined region of parameter space for the record associated with that operation to be "included". An exemplary "scoring" method used within the exemplary program is as follows.(see column 4 lines 48-67 and column 5 lines1-5).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Lundahl to include arranged in a hierarchical tree structure in the computer for calculating with the prediction model in a

first root layer of the hierarchical tree structure, an output value from at least one attribute included in the input data by a calculation unit of the computer taught by Giles in order to determining the combination of variables and values of those variables which are most likely to result in specific outcomes.

As per claim 2 Lundahl discloses, wherein the prediction model is one of :
a scoring model to calculate a score from attributes of the input data and
an attribute prediction model to predict from attributes of the input data, a value of another attribute. (see column 30 lines 25-65 and column 31 lines 25-65 and column 32 lines 5-35 and column 34 lines 55-65 and column 35 lines 5-10).

As per claim 3, Lundahl discloses, wherein the prediction model in the final leaf layer is a scoring model. (see column 32 lines 5-35 and column 35 lines 5-10).

As per claim 4, Lundahl discloses, further comprising the step of storing at least one threshold value in a storing unit (see column 9 lines 40-44) of the computer and wherein said selection of the prediction model in the subsequent layer is determined according to the output value and the stored threshold value by the selection unit. (see column 42 lines 40-55 and column 9 lines 40-44) as interpretive as claimed.

As per claim 5, Lundahl discloses, wherein said selection of the prediction model in the subsequent layer is determined according to the output value and a category to which the output value belongs by the selection unit. (see column 42 lines 40-55).

As per claim 6, Lundahl discloses further comprising the step of displaying a number of uses of an attribute used in the all layers on a display unit connected to a computer. (see column 20 lines 30-35 and column 10 lines 34-46).

As per claim 7, Lundahl further comprising the step of displaying prediction models used in the layers and output values thereof on a display unit connected to a computer. (see column 20 lines 30-35 and column 10 lines 34-46).

As per claim 8, Lundahl discloses a score calculation system for calculating a score from an input data including a plurality of attributes, comprising:
calculation means in a computer for processing input data using a plurality of prediction models (see column 8 lines 60-67 and column 9 lines 1-67 and column 10 lines 1-2)

arranged in a selecting means in the computer (see column 44 lines 9-44) for selecting the prediction model in a subsequent layer("i. e, "second data matrix" see column 42 lines 55-60) (see column 31 lines 25-65 and column 32 lines 5-35) and display means connected to the computer for displaying a score(see column 10 lines 34-46) wherein the calculation means calculates an output value (i. e, optimal value") with the prediction model (see column 44 lines 9-44 and column 42 lines 37-60 and column 43 lines 10-15) in an N-th layer (N >= 1) ("i. e, multiplicity of the same function") from at least one attribute included in the input data said selecting means selects &the prediction model in-a-in the subsequent layer according to the output value of the prediction model of the layer, and said display means displays a score output from said final leaf layer prediction model. (see column 13 lines 35-40 and column 30 lines 25-65 and column 31 lines 25-65 and column 32 lines 5-35 and column 34 lines 55-65 and column 35 lines 5-10) Lundahl further discloses description for the terms calibration, updating, and querying, refer generally to modeling and or functional relationships with or within or between datasets (see column 8 lines 19-21).

Lundahl fail to explicitly teach hierarchical tree structure.

However Giles discloses many of the traditional cluster analysis methods, both partitioning and hierarchical, are encumbered by looking for many or all possible clusters within the data this is followed by a cluster consolidation process(see column 2 lines 39-63) and After initialization and input processes, the inventive method finds the optimal "boundary" for each numeric independent input variable and calculates a "score" for each independent input variable, whether the variable is numeric or categoric. The method then finds the best "boundary(ies)" and highest "score" for the combination of the two highest scoring independent variables and is repeated for the three highest scoring independent variables. This can be repeated for any number of independent variables and the "score" which is critical to the analysis process is basically a decision criteria. While there are many ways to calculate a "score", the following describes an exemplary way which appears to work well for manufacturing data. First, a numeric variable value is defined as "included" if the value is between the "boundary" and the maximum or minimum value for that variable, depending on whether

the "boundary" is on the high or low side of the average for that variable. For categoric variables, "included" is determined by which of two values (i.e., categories) the variable has. One type of outcome is referred to as "bad", and the other is referred to as "good". For combinations of variables, the values of all of the variables for a particular process operation must be within the defined region of parameter space for the record associated with that operation to be "included". An exemplary "scoring" method used within the exemplary program is as follows.(see column 4 lines 48-67 and column 5 lines1-5).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Lundahl to include arranged in a hierarchical tree structure in the computer for calculating with the prediction model in a first root layer of the hierarchical tree structure, an output value from at least one attribute included in the input data by a calculation unit of the computer taught by Giles in order to determining the combination of variables and values of those variables which are most likely to result in specific outcomes.

As per claim 9, Lundahl discloses wherein said calculation means and said selecting means are implemented respectively by different computers. (see column 8 line 60).

As per claim 10, Lundahl discloses wherein said calculation means is installed on a computer models are executing respective prediction models.(see column 8 line 60).

As per claim 11, Lundahl discloses an apparatus comprising a storage medium ("i. e, "computer server" see column 9 lines 45-44) with a program for calculating a score(see column 33 lines 39-48) from an input data including a plurality of attributes stored therein the program when executed causing a computer to, execute the steps of: preparing a plurality of prediction models (see column 8 lines 60-67 and column 9 lines 1-67 and column 10 lines 1-2)
arranged in a the computer for calculating with the prediction model in a first root layer ("i. e, "first data matrix") (see column 10 lines 3-10 and column 42 lines 37-60 and column 43 lines 10-15) an output value ("i. e, optimal value") from at least one attribute included in the input data by a calculation unit of the computer and selecting the

prediction model in a subsequent layer according to the output value ("i. e, optimal value") by a selection unit of the computer(see column 44 lines 9-44) repetitiously ("i. e, repeatedly") executing the output value calculation step and the subsequent layer prediction model selection step while shifting the layer to a leaf side until the prediction model of a final leaf layer of the (see column 44 lines 9-44 and column 42 lines 37-60 and column 43 lines 10-15) is reached and calculating a score(see column 33 lines 39-48) from the input data using the prediction model of the final leaf layer by the calculation unit.(see column 41 lines 47-50 and column 44 lines 9-44 and column 42 lines 37-60 and column 43 lines 10-15) Lundahl further discloses description for the terms calibration, updating, and querying, refer generally to modeling and or functional relationships with or within or between datasets (see column 8 lines 19-21).

Lundahl fail to explicitly teach hierarchical tree structure.

However Giles discloses many of the traditional cluster analysis methods, both partitioning and hierarchical, are encumbered by looking for many or all possible clusters within the data this is followed by a cluster consolidation process(see column 2 lines 39-63) and After initialization and input processes, the inventive method finds the optimal "boundary" for each numeric independent input variable and calculates a "score" for each independent input variable, whether the variable is numeric or categoric. The method then finds the best "boundary(ies)" and highest "score" for the combination of the two highest scoring independent variables and is repeated for the three highest scoring independent variables. This can be repeated for any number of independent variables and the "score" which is critical to the analysis process is basically a decision criteria. While there are many ways to calculate a "score", the following describes an exemplary way which appears to work well for manufacturing data. First, a numeric variable value is defined as "included" if the value is between the "boundary" and the maximum or minimum value for that variable, depending on whether the "boundary" is on the high or low side of the average for that variable. For categoric variables, "included" is determined by which of two values (i.e., categories) the variable has. One type of outcome is referred to as "bad", and the other is referred to as "good". For combinations of variables, the values of all of the variables for a particular process

operation must be within the defined region of parameter space for the record associated with that operation to be "included". An exemplary "scoring" method used within the exemplary program is as follows. (see column 4 lines 48-67 and column 5 lines1-5).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Lundahl to include arranged in a hierarchical tree structure in the computer for calculating with the prediction model in a first root layer of the hierarchical tree structure, an output value from at least one attribute included in the input data by a calculation unit of the computer taught by Giles in order to determining the combination of variables and values of those variables which are most likely to result in specific outcomes.

As per claim 12, Lundahl discloses further including receiving means for receiving the input data from the other computer via a network and sending mean for sending the output value to the other computer via the network.(see column 46 15-21).

Response to Arguments

4. Applicant's arguments files on 10/27/04 have been fully considered but they are not persuasive for the following reasons.

5. In response to applicant's arguments regarding Lundahl and Giles.

6. In response to Applicant's arguments that the reference fail to teach or suggest" calculating a score from the data and preparing a plurality of predictions models arranged in an hierarchical tree structure and first root layer of an hierarchical structure and subsequent layer of the hierarchical tree structure according to the output value and shifting the layer to a leaf side of the hierarical tree structure prediction model until the prediction model of a final leaf layer of the hierarchical tree structure is reached and calculating a score form input data using the prediction model of the final leaf layer by calculation unit" these limitations are addressed in a combinations of teachings as stated.

Lundahl discloses a score calculation method in a computer of calculating a score from an input data including a plurality of attributes comprising the steps of:

preparing a plurality of prediction models see column 8 lines 60-67 and column 9 lines 1-67 and column 10 lines 1-2 arranged in a the computer for calculating with the prediction model in a first root layer ("i. e, "first data matrix") see column 10 lines 3-10 and column 42 lines 37-60 and column 43 lines 10-15 an output value ("i. e, optimal value") from at least one attribute included in the input data by a calculation unit of the computer and selecting the prediction model in a subsequent layer according to the output value ("i. e, optimal value") by a selection unit of the computer see column 44 lines 9-44 repetitiously ("i. e, repeatedly") executing the output value calculation step and the subsequent layer prediction model selection step while shifting the layer to a leaf side until the prediction model of a final leaf layer of the see column 44 lines 9-44 and column 42 lines 37-60 and column 43 lines 10-15 is reached and calculating a score(see column 33 lines 39-48) from the input data using the prediction model of the final leaf layer by the calculation unit see column 41 lines 47-50 and column 44 lines 9-44 and column 42 lines 37-60 and column 43 lines 10-15 and description for the terms calibration, updating, and querying, refer generally to modeling and or functional relationships with or within or between datasets see column 8 lines 19-21. Giles discloses many of the traditional cluster analysis methods, both partitioning and hierarchical, are encumbered by looking for many or all possible clusters within the data this is followed by a cluster consolidation process(see column 2 lines 39-63) and After initialization and input processes, the inventive method finds the optimal "boundary" for each numeric independent input variable and calculates a "score" for each independent input variable, whether the variable is numeric or categoric. The method then finds the best "boundary(ies)" and highest "score" for the combination of the two highest scoring independent variables and is repeated for the three highest scoring independent variables. This can be repeated for any number of independent variables and the "score" which is critical to the analysis process is basically a decision criteria. While there are many ways to calculate a "score", the following describes an exemplary way which appears to work well for manufacturing data. First, a numeric variable value is defined as "included" if the value is between the "boundary" and the maximum or minimum value for that variable, depending on whether the "boundary" is on the high or

low side of the average for that variable. For categoric variables, "included" is determined by which of two values (i.e., categories) the variable has. One type of outcome is referred to as "bad", and the other is referred to as "good". For combinations of variables, the values of all of the variables for a particular process operation must be within the defined region of parameter space for the record associated with that operation to be "included". An exemplary "scoring" method used within the exemplary program is as follows. see column 4 lines 48-67 and column 5 lines1-5.

It is obviously clear that the claimed features are incorporated within the combination teachings.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, THIS ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Clement B Graham whose telephone number is 703-305-1874. The examiner can normally be reached on 7am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hyung S. Sough can be reached on 703-308-0505. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-0040 for regular communications and 703-305-0040 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

CG

January 4, 2004

HYUNG SOUGH
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3600